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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,262	12/01/2003	Osamu Okumura	117757	1628

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EXAMINER	
CALEY, MICHAEL H	
ART UNIT	**PAPER NUMBER**
2871	

DATE MAILED: 11/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/724,262	OKUMURA, OSAMU	
	Examiner	Art Unit	
	Michael H. Caley	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☒ Claim(s) *1 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 1 and 14 are objected to because of the following informalities:

In claim 1, the phrase "...the alignment controlling elements each having a linear portion that extends across one dot region" is not supported by the specification. A dot region is disclosed as having both a transmissive display area and a reflective display area (Claim 1 lines 3-5). Figures show the alignment controlling elements as having a linear portion in only one of a reflective or transmissive region of a dot region. The specification does not disclose an alignment controlling element as extending across both a transmissive area and a reflective area of a dot region.

In claim 14, all limitations are previously recited in claim 10 from which claim 14 is dependent.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10, 13-15, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Ogishima et al. (U.S. Patent Application Publication 2002/0149728 "Ogishima").

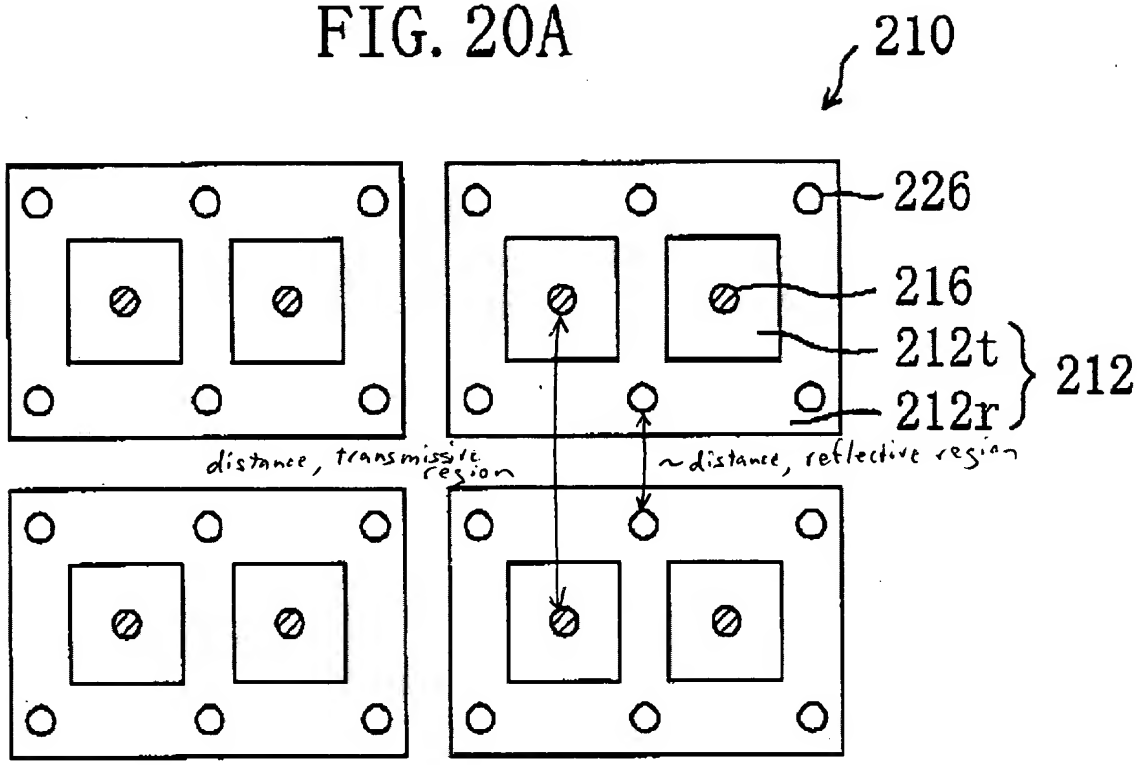
Regarding claims 10 and 18, Ogishima discloses a liquid crystal display device and electronic equipment having:

a pair of substrates having an electrode each arranged on a side of an opposite surface (Page 7 [0109], [0110]);

a liquid crystal layer (Figure 18B element 230) held between the substrates and having a transmissive display region (Figure 18B element T) for transmissive display and a reflective display region (Figure 18B element R) for reflective display in each of a plurality of dot regions (Page 7 [0107]), the liquid crystal layer including a liquid crystal having a negative dielectric anisotropy (Page 7 [0109]); and

a plurality of alignment controlling elements (Figures 18A and 18B elements 216 and 226) controlling the alignment of the liquid crystal in each of the transmissive display region and the reflective display region, the alignment controlling elements provided on the electrode of at least one of the pair of substrates, the occupying area of the alignment controlling elements in a plane direction of the substrate being set larger in the reflective display region than in the transmissive display region (Figures 18A and 18B), the distance between adjacent two of the alignment controlling elements arranged in the reflective display region being smaller than the distance between adjacent two of the alignment controlling elements arranged in the transmissive display region (Figure 20A, vertical direction).

FIG. 20A



Regarding claim 11, Ogishima discloses the alignment controlling elements as having at least one of a slit opening removed and a dielectric arranged on the electrode (Page 18 [0118]).

Regarding claim 13, Ogishima discloses the dielectric protrusion as being arranged on the electrode and having an inclined surface inclining at a predetermined angle to the electrode surface (Figures 18A and 18B).

Regarding claim 14, Ogishima discloses the distance between adjacent two of the openings and/or protrusions arranged in the reflective display region as being smaller than the

distance between adjacent two of the openings and/or protrusions arranged in the transmissive display regions (Figure 20A, vertical direction).

Regarding claim 15, Ogishima discloses the slit openings and/or the protrusions having a configuration to control the tilt direction of the vertically aligned liquid crystal molecules depending on change in electric field (Page 7 [0110]-[0113]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogishima in view of Chen et al. (U.S. Patent No. 6,806,929 "Chen").

Ogishima discloses all of the proposed limitations except for the distance between the electrodes arranged on the pair of substrates as being substantially equal in the transmissive display region and the reflective display region. Chen, however, teaches an analogous transflective device that has substantially equal distances in both regions (Column 2 line 48 – Column 3 line 30).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the distance between the electrodes in the transmissive and reflective display regions to be substantially the same. Chen teaches a difference in driving voltages

between regions as a means of avoiding the difficulty in reaching an appropriate reduction of cell gap in the reflective region (Column 1 lines 12-45). One would have been motivated to apply such a driving technique to the analogous display device disclosed by Ogishima to avoid problems associated with adjusting the cell gap in the reflective region and thus provide a substantially equal cell gap in the reflective and transmissive regions.

Claims 16 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Ogishima in view of Jisaki et al. (U.S. Patent No. 6,753,939 "Jisaki").

Regarding claim 16, Ogishima discloses an upper substrate and a lower substrate as the pair of substrates (Page 7 [0109]), the lower substrate having a reflective film on a side facing the liquid crystal layer (Figure 18B element 212r, the reflective layer being selectively arranged only in the reflective display regions (Figure 18B elements R and T).

Ogishima fails to explicitly disclose the lower substrate as having a backlight for transmissive display arranged on an opposite side to the liquid crystal layer. Jisaki, however, teaches such a backlight arranged as proposed for providing illumination for the transmissive region of the display in a display having both reflective and transmissive regions (Figure 4 element 12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have arranged a backlight on the opposite side of the lower substrate as proposed. One would have been motivated to provide a backlight as proposed to enable operation of the display in a transmissive mode to allow for display use in poorly lit conditions according to conventional means.

Regarding claim 17, Ogishima discloses the upper substrate as the color filter substrate (Page 7 [0109]), but fails to explicitly disclose the color filter as on a side of the substrate facing the liquid crystal layer. Jisaki, however, teaches such an arrangement of the color filter (Figure 4 element 29) on a same side of the upper substrate as the liquid crystal layer (Figure 4 element 3) in common with conventional techniques in the art for direct view liquid crystal displays.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the color filter disclosed by Ogishima on the side of the upper substrate facing the liquid crystal. One would have been motivated to form the color filter on the substrate on the same side as the liquid crystal to avoid problems of parallax while viewing the display at wide viewing angles.

Claims 1, 3, 4, 5, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogishima in view of Kubo et al. (U.S. Patent No. 6,195,140 "Kubo").

Regarding claims 1 and 8, Ogishima discloses a liquid crystal display device and electronic equipment having:

a pair of substrates having an electrode, each arranged on a side of an opposite surface (Page 7 [0109], [0110]);

a liquid crystal layer (Figures 53A and 53B) held between the substrates and having a transmissive display region (Figure 54 element 312t) for transmissive display and a reflective display region (Figure 54 element 312r) for reflective display in each of a plurality of dot regions (Page 7 [0107]),

the liquid crystal layer including a liquid crystal having negative dielectric anisotropy (Page 7 [0109]); and

a plurality of alignment controlling elements (Figure 54 element 347) controlling the alignment of the liquid crystal in each of the transmissive display region and the reflective display region, the alignment controlling elements provided on the electrode (Figure 53) of at least one of the pair of substrates, the alignment controlling elements each having a linear portion that extends across one dot region.

Ogishima fails to explicitly disclose the occupying area of the alignment controlling elements in a plane direction of the substrate as being set larger in the reflective display region than in the transmissive display region. Ogishima discloses a variety of embodiments such as in Figure 54, which show linear alignment controlling elements in both the transmissive and reflective display regions. Kubo teaches increasing the area percentage of the reflective region to transmissive region to up to 90% in an analogous transflective display as an optimization of the display such as for use outdoors and to lengthen battery life (Column 29 line 64 – Column 30 line 22).

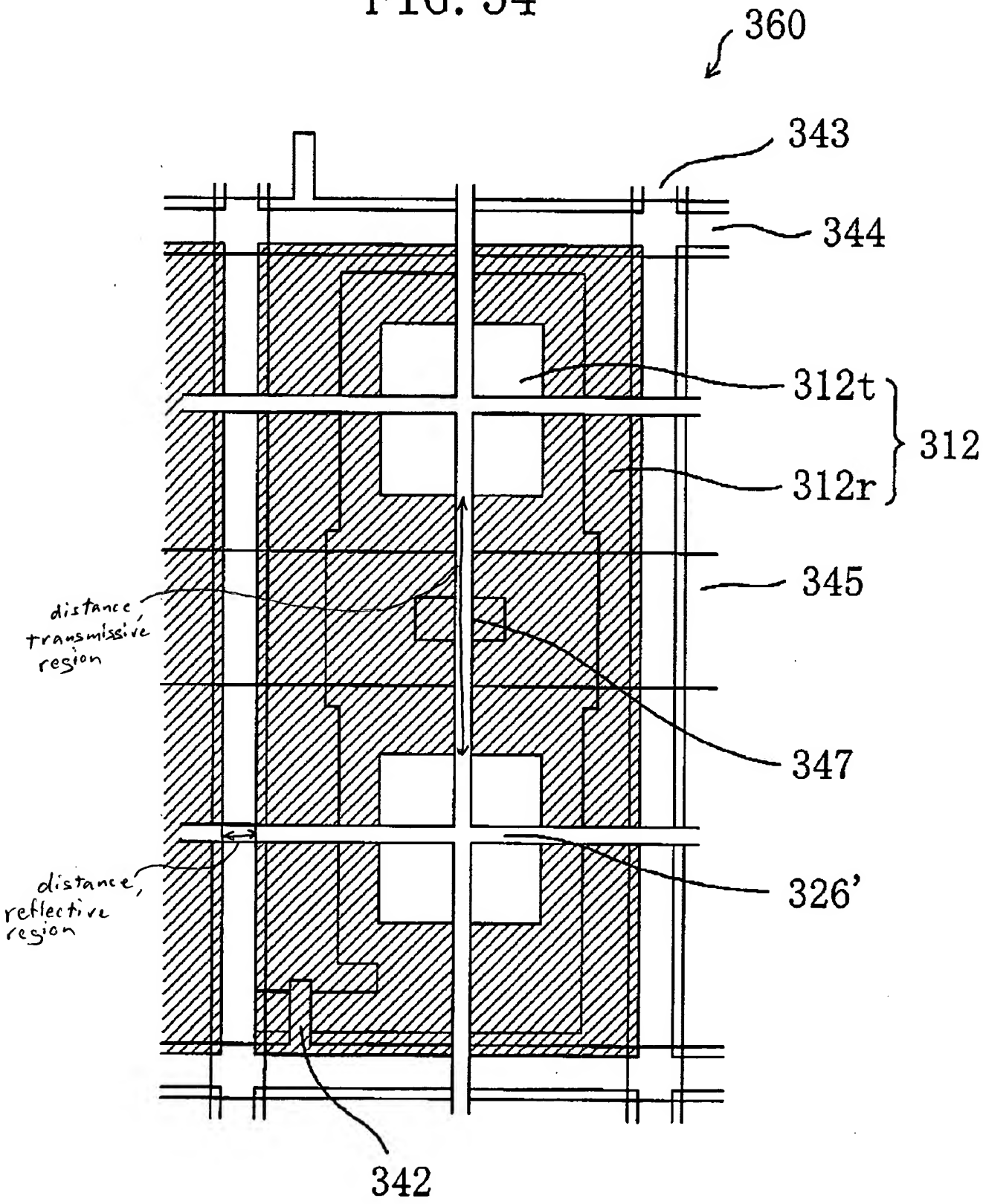
It would have been obvious to one of ordinary skill in the art at the time the invention was made to increase the percentage of reflective region in the display device disclosed by Ogishima, thus setting the occupying area of the alignment controlling elements to be larger in the reflective region than in the transmissive region. One would have been motivated to set the area of the reflective region to be higher than the area of the transmissive area to optimize the display for outdoor use and to lengthen the battery life according to the teachings of Kubo.

Regarding claim 9, Ogishima discloses the alignment controlling elements as dielectric protrusions being arranged on the electrode (Figure 54 element 326')

Regarding claim 3, Ogishima discloses the dielectric protrusion as being arranged on the electrode and having an inclined surface inclining at a predetermined angle to the electrode surface (Figure 53).

Regarding claims 4, 10, 13-15, and 18, Ogishima discloses the distance between adjacent two of the openings and/or protrusions arranged in the reflective display region as being smaller than the distance between adjacent two of the openings and/or protrusions arranged in the transmissive display regions (Figure 54, distance between horizontally adjacent protrusions between reflective display dot regions are smaller than distance between vertically adjacent protrusions in transmissive region, see Figure below).

FIG. 54


360
343
344
312t
312
312r
345
distance, transmissive region
347
distance, reflective region
326'
342

Regarding claim 5, Ogishima discloses the slit openings and/or the protrusions having a configuration to control the tilt direction of the vertically aligned liquid crystal molecules depending on change in electric field (Page 7 [0110]-[0113]).

Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogishima in view of Kubo and in further view of Chen et al. (U.S. Patent No. 6,806,929 "Chen").

Ogishima discloses all of the proposed limitations except for the distance between the electrodes arranged on the pair of substrates as being substantially equal in the transmissive display region and the reflective display region. Chen, however, teaches an analogous transflective device that has substantially equal distances in both regions (Column 2 line 48 – Column 3 line 30).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the distance between the electrodes in the transmissive and reflective display regions to be substantially the same. Chen teaches a difference in driving voltages between regions as a means of avoiding the difficulty in reaching an appropriate reduction of cell gap in the reflective region (Column 1 lines 12-45). One would have been motivated to apply such a driving technique to the analogous display device disclosed by Ogishima to avoid problems associated with adjusting the cell gap in the reflective region and thus provide a substantially equal cell gap in the reflective and transmissive regions.

Claims 6, 7, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogishima in view of Kubo and in further view of Jisaki et al. (U.S. Patent No. 6,753,939 "Jisaki").

Regarding claim 6, Ogishima discloses the lower substrate having a reflective film on a side facing the liquid crystal layer (Figure 54 element 312r), the reflective layer being selectively arranged only in the reflective display regions in one dot region (Figure 54 elements 312R and 312T).

Ogishima fails to explicitly disclose a backlight for transmissive display arranged on an opposite side to the liquid crystal layer of a substrate. Jisaki, however, teaches such a backlight arranged as proposed for providing illumination for the transmissive region of the display in a display having both reflective and transmissive regions (Figure 4 element 12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have arranged a backlight on the opposite side of the lower substrate as proposed. One would have been motivated to provide a backlight as proposed to enable operation of the display in a transmissive mode to allow for display use in poorly lit conditions according to conventional means.

Regarding claim 7, Ogishima discloses the upper substrate as the color filter substrate (Page 7 [0109]), but fails to explicitly disclose the color filter as on a side of the substrate facing the liquid crystal layer. Jisaki, however, teaches such an arrangement of the color filter (Figure 4 element 29) on a same side of the upper substrate as the liquid crystal layer (Figure 4 element 3) in common with conventional techniques in the art for direct view liquid crystal displays.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the color filter disclosed by Ogishima on the side of the upper substrate facing the liquid crystal. One would have been motivated to form the color filter on the substrate on the same side as the liquid crystal to avoid problems of parallax while viewing the display at wide viewing angles.

Response to Arguments

Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael H. Caley whose telephone number is (571) 272-2286. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael H. Caley
November 21, 2005
mhc

ANDREW SCHECHTER
PRIMARY EXAMINER